Lewis Radcliffe

Bulletin of the Museum of Comparative Zoölogy
AT HARVARD COLLEGE.
Vol. LXVIII. No. 3.

DESCRIPTIONS OF NEW SOUTH AMERICAN FRESH-WATER FISHES COLLECTED BY DR. CARL TERNETZ.

By George S. Myers.

Library,
U. S. Fisheries Biological Station,
Seattle, Washington.

CAMBRIDGE, MASS., U. S. A.:
PRINTED FOR THE MUSEUM.
July, 1927.

REPORTS ON THE SCIENTIFIC RESULTS OF THE EXPEDITION TO THE EASTERN TROPICAL PACIFIC, IN CHARGE OF ALEXANDER AGASSIZ, BY THE U. S. FISH COMMISSION STEAMER "ALBATROSS," FROM OCTOBER, 1904, TO MARCH, 1905, LIEUTENANT COMMANDER L. M. GARRETT, U. S. N., COMMANDING, IN PREPARATION: —

R. P. BIGELOW. The Stomatopods.
O. CARLGREN. The Actinaria.
W. R. COE. The Nemerteans.
H. J. HANSEN. The Cirripeds.
W. E. HOYLE. The Cephalopods.
P. KRUMBACH. The Sagittae.
G. W. MÜLLER. The Ostracods.
MARY J. RATHBUN. The Crustacea Decapoda.
G. O. SARS. The Copedods.
——. Pteropods, Heteropods.

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No. 3.— *Descriptions of New South American Fresh-Water Fishes collected by Dr. Carl Ternetz.*[1]

By George S. Myers.

The present report is concerned with the description of some new species obtained for Indiana University by Dr. Carl Ternetz in the Rio Tocantins and its headwaters, the Lower Amazon as far as the mouth of the Rio Negro, the Rio Negro to the entrance of the Cassiquiare, the Cassiquiare, and the Orinoco from Bifurcation to Caicara. Dr. Ternetz started in the headwaters of the Tocantins in September, 1923, and ended his collecting at Caicara in May, 1925. The result is a magnificent series of fishes, most of them from waters hitherto unexplored systematically by an ichthyologist.

The collection is so vast that any attempt at an estimate of its richness is impossible. The forms treated are merely some of the smaller species noticed as being of especial interest. The percentage of novelties will undoubtedly be greatly augmented when the bulk of the collection is examined, especially as practically all of the larger fishes are as yet unstudied. In the Pygidiidae only is the report at all complete.[2]

In the absence of Dr. Eigenmann from the University, he very kindly allowed me to describe some of the new species and authorized an agreement as to the publication of my results whereby a series of the new species was given to the M. C. Z.[3]

A remarkable new form is the *Gnathodolus bidens*, with mouthparts unique among fishes; scarcely less interesting are the finless pygidiid Glanapteryx and the crenuchine characin Elachocharax. A few species collected in Peru by Dr. W. R. Allen, in Bolivia by Dr. N. E. Pearson, and at Rio de Janeiro by Mr. R. Brocca are included.

In the descriptions I have taken the scale-counts from the upper end of the gill-opening to the approximate end of the hypural bone, this being designated as "caudal base," and from the base of the first dorsal ray to the pelvic fins.

[1] Contributions from the Zoölogical Laboratory of Indiana University, No. 217.

[2] Dr. E. W. Gudger has a paper in preparation on the parasitic Pygidiidae, partially based on the present collection.

[3] Dr. Eigenmann died at Coronado, California, 24 April, 1927.

ANOSTOMATIDAE.

GNATHODOLUS, gen. nov.

γνάθος, jaw, and δόλος, a trap.

GENOTYPE.— *Gnathodolus bidens* Myers.

Anostomatinae. Form heavy, compressed. Snout deep, elliptical in cross-section, truncate. Mouth-opening vertical or even inclining somewhat backward, narrow and elongate. Lower jaw rod-like, folding upward to close the mouth-slit. The jaw extends up beyond the top of the snout in adult specimens, and bears at its tip two large, hooked, projecting teeth, sickle-shaped at the tip. The dentition of the upper jaw consists of three or four spear-shaped teeth on each side, directed outward and nearly imbedded in the flesh. Gill-membranes united, confluent with the isthmus. Lateral line complete.

GNATHODOLUS BIDENS, sp. nov.

Head $3\frac{1}{2}$ in body-length. Depth $3\frac{2}{5}$. Eye 4 in head, $1\frac{1}{2}$ in snout, 2 in interorbital. Dorsal $11\frac{1}{2}$. Anal $10\frac{1}{2}$. Scales 5–31–5, about 12 predorsal.

Eyes bulging, with a strong adipose lid, particularly anteriorly. The eyes project more anteriorly than posteriorly and thus point a little backward. The fish apparently cannot see forward. Margins of mouth-opening and of lower jaw thickly papillose. Dorsal originating an eye-diameter nearer to snout-tip than to caudal base. Pelvics inserted under third dorsal ray. Pectorals not to pelvics. Pelvics distant from anal. Adipose fin over posterior part of anal base. Caudal forked, asymmetrical, the upper lobe longer with the appearance of a piece having been bitten from its inner portion. Lower lobe shorter, thick, and rounded. This is the formation in the Type and as it is duplicated in the one Paratype (from a different locality) that has an unbroken caudal, it seems to be natural. There are, however, traces of some slight regeneration along the whole caudal edge in both specimens, but the agreement in caudal form of the two perfect specimens could hardly be a coincidence.

Scales large, hard, similar to those of *Leporinus friderici* Cockerell, (Ann. Carnegie mus., 1914, **9**, pl. 26, fig. 3), but longer; little exposed, most of the exposed surface being formed by a wide soft apical border; both soft and hard apical margins evenly rounded; a few nuclear polygonal areas giving rise to five or six apical radii, two upper and two

lower antipodal radii, and three or four basal radii. Basal notch as in Leporinus. Circuli faint, becoming obsolete or absent on the exposed sector of the scale.

Coloration dull brownish. Midpredorsal area blackish. Six to eight diffuse dark cross-bars from midline of back, becoming indistinct and fading before reaching the lateral line. A large diffuse black spot on middle of sides below posterior part of dorsal base and a similar smaller one opposite the anal. Scales with indistinct light basal areas, these forming faint lateral stripes. Suborbital area tinged with violet.

TYPE.— 17,670 I. U. 134 mm. Venezuela: Rio Cassiquiare, Chemoni (near Bifurcation). 13 March, 1925. Carl Ternetz.

PARATYPES.— 17,671 I. U. 31,566 M. C. Z. 90,103 mm. Venezuela: Laga Tama-Tama, Bifurcation. 24 March, 1925. Carl Ternetz.

CURIMATIDAE.

CURIMATUS MULTILINEATUS, sp. nov.

Head $3\frac{2}{3}$ in body-length. Depth $3\frac{1}{3}$. Eye $2\frac{2}{3}$ in head, equal to interorbital, a little longer than snout. Least depth of caudal peduncle $2\frac{1}{4}$ in head. Dorsal 11. Anal $9\frac{1}{2}$. Scales 4–31–$4\frac{1}{2}$.

Ventral profile slightly more arched than the dorsal. Dorsal profile somewhat arched on head, with a slight break in the symmetry at nape. Greatest depth at dorsal origin.

Dorsal fin originating an eye-diameter nearer to snout-tip than to caudal base. Pelvics originating under middle of dorsal base. Pectorals not nearly reaching pelvics. Pelvics not nearly to anal. Adipose large, over posterior part of anal base. Anal rays not reaching caudal. Depressed dorsal rays not reaching vertical of anal fin-origin.

A dark line from under jaw around snout to eye. Narrow dark brown longitudinal lines between the scale-rows. Iris dark interiorly, light exteriorly. Fins slightly dusky.

TYPE.— 17,672 I. U. 55 mm. Brazil: Rio Negro, Bucury. 7 February, 1925. Carl Ternetz.

Bucury is evidently above São Gabriel, since Dr. Ternetz collected at that place on February 1, on his way up-river.

Differs from all known species in its striking coloration. Perhaps nearest *C. microcephalus*.

HEMIODONTIDAE.

Hemiodus ternetzi, sp. nov.

Head $4\frac{2}{5}$ to $4\frac{2}{3}$ in body-length. Depth $4\frac{2}{5}$. Eye 3 in head. Scales 11–63–6. Dorsal 9. Anal 9.

Dorsal fin-origin slightly more than a snout-length nearer to snout-tip then to caudal base. Pelvics inserted under the fifth dorsal ray. Pectorals nearly their own length short of reaching pelvics.

Brown on back, the scales basally dark with a light border. Sides silvery. A conspicuous dark lateral band from eye to caudal base, expanded into a spot above the pectoral tips and again above the last half of the appressed pelvics. Lower caudal lobe dark, the upper light, the darker lateral band turning downward at caudal base and running out through the middle of the lower lobe.

Type.— 17,691 I. U. 100 mm. Brazil: Jausinho Brook, into the Tocantins, Goyaz. 22 February, 1924. Carl Ternetz.

Paratypes.— 17,692 I. U. 31,567 M. C. Z. 85–88 mm. Brazil: Jausinho Brook, into the Tocantins, Goyaz. 22 February, 1924. Carl Ternetz.

Named for Dr. Carl Ternetz, who, through his personal effort, has brought together for Indiana University one of the finest collections of South American fresh-water fishes in existence.

CHARACIDAE.

Copeina compta, sp. nov.

Head $4\frac{1}{2}$ to $4\frac{2}{3}$ in body-length. Depth $5\frac{1}{2}$. Scales 26 to caudal base, 16 rows around body before pelvics, 17 predorsal. Eye equal to snout, $3\frac{1}{3}$ in head. Dorsal 10. Anal 11.

Dorsal originating $1\frac{1}{2}$ times as far from head as from caudal base. Anal inserted under about the fourth dorsal ray. In the adult male the fins are greatly prolonged; the produced middle rays of the dorsal reach the caudal; the pelvic rays reach the end of the anal base; the elongate pointed upper caudal lobe is $1\frac{2}{3}$ times as long as the head. The male pectorals are longer, but in neither sex do they reach the pelvics. The caudal base as well as the caudal shows a heterocercal tendency.

Coloration dark. A dark band around the chin through the eye and across the opercle, becoming diffuse posteriorly. Back brownish. A

wide dark lateral band down the side, its upper edge well defined and continuous with the head-streak, its lower border fading gradually into the dull yellow of the venter. On the middle of the second to the sixth dorsal rays there is a black blotch, above a basal whitish one. The elongate dorsal and caudal rays of the male are slightly black tipped.

TYPE.— 17,693 I. U. ♂ 71 mm. Brazil: Creek above São Gabriel Rapids, Rio Negro. January, 1925. Carl Ternetz.

PARATYPES.— 17,694 I. U. 31,568 M. C. Z. ♂ ♀ juv. 65–71 mm. Brazil: Creek above São Gabriel Rapids, Rio Negro. 28–30 January, 1925. Carl Ternetz.

This species represents the acme of gracefulness reached by characins of the Pyrrhulininae. I have compared it with a single male *C. arnoldi* from the lower Amazon, received from Mr. Arthur Rachow of Hamburg, and with many specimens of *C. callolepis* collected by Dr. Ternetz at various localities on the Lower Amazon. The latter is the only closely-related species. *Copeina arnoldi* is much deeper, and both differ from *C. compta* in the scale-count, fin-positions, and coloration; *C. carsevennensis* differs much in the fin-positions.

I take this opportunity to point out the similarity of *Pyrrhulina obermülleri* Myers (Copeia, 1926, no. 156, p. 150. Iquitos) to *P. lugubris* Eigenmann (Mem. Carnegie mus., 1922, **9**, p. 231, pl. 21, fig. 1. Meta Basin), with which by an oversight I neglected to compare it. The former will probably rank as a brilliantly-colored subspecies of the latter. Both are well distinguished from *P. brevis* by the narrow elongate and almost straight strongly-toothed maxillary. In *P. brevis* it is short and curved.

The shape of the maxillary is important in the distinction of the species of Pyrrhulininae. In *Copeina argyrops* and *C. guttata* it is short, almost round, and toothless. In *Copeina callolepis* and *C. compta* the maxillary of the male is of a peculiar shape, having a triple curve, and it is toothed. In *C. arnoldi* and *C. metae* it is toothed, somewhat elongate, and a little curved, like that of *Pyrrhulina brevis*. That of Guiana specimens of *P. semifasciata* is similar, but in Guiana *P. filamentosa* the maxillary is toothless, although similar in shape. The maxillary of *P. rachoviana*, due to the short heavy head, is nearly vertical; it is toothless.

Pyrrhulina rachoviana Myers (Blätt. aquar. terrar., 1926, **37**, p. 441) is very similar to Steindachner's figure of the male of his *P. brevis* (Sitzb. K. akad. wiss., Wien, 1875, **72**, pl. 1, fig. 3), but *P. rachoviana* has a shorter head and the pectorals do not reach the pelvics, the latter being larger in *P. brevis*. The dorsal spot of *P. rachoviana* is more

streak-like, and is confined to the anterior rays. I hereby restrict the name *P. brevis* to Steindachner's "female" (*loc. cit.*, fig. 4) which is probably specifically different from the "male." I do not know the form Regan had (Ann. mag. nat. hist., 1912, ser. 8, **10**, p. 392).

ATOPOMESUS, gen. nov.

ἄτοπος, peculiar, and μέσος, middle.

GENOTYPE.— *Atopomesus pachyodus* Myers.

Cheirodontinae. Teeth extremely massive and heavy, somewhat laterally compressed, but the major ones arising to an unexpanded, rounded crest which is compressed anteroposteriorly, this forming a rather blunt, rounded, transverse, cutting crown without any cusps or notches whatever. The three front-teeth on each side of the dentary are especially massive, each with an inner, oblique flat area. They grade downward in size toward the sides, the fifth to the eighth tooth of each side of the dentary with a falcate inner crown rather than a flat surface, this being formed by a single inner cusp. Following these at the side are two abruptly smaller conical teeth. Premaxillary teeth in a single series, seven on each side, grading from the central massive ones to smaller ones at the side, all directed obliquely backward, the tips and extreme inner bases of the teeth tinged with brown. Maxillary with six small conical or slightly notched teeth crowded to its upper end.

Mouth inferior, the lower teeth fitting up inside the retrorse upper ones. The flat areas of the mandibular dentition cannot, then, be grinding surfaces. The upper teeth are slightly visible from below when the mouth is closed, but are in no way exposed like those of Henochilus and Psalidodon, with which I at first thought this genus was related.

A series of large scales on each side of the preventral region overlapping at the midline, as in Phenacogaster. Accessory caudal rays prominent.

ATOPOMESUS PACHYODUS, sp. nov.

General appearance of a slender Creagrutus or Phenacogaster.

Head $3\frac{2}{3}$ in body-length. Depth 4. Dorsal 10. Anal 22. Scales 4–32–3, predorsal 9, fully scaled. Eye $2\frac{2}{3}$ in head, much greater than interorbital, the orbit horizontally oval.

Dorsal origin half an orbit-diameter nearer to snout-tip than to caudal base, the fin high and pointed. Anal origin under last few dorsal rays, its margin falcate, the anterior few rays long. Pelvics originating

very slightly in advance of vertical of dorsal origin, a little overlapping the anal fin-origin. Pectorals reaching pelvics. Adipose well developed, over posterior anal rays. Scales cycloid, lateral line complete. Caudal naked, the lobes pointed, the upper slightly the longer. Accessory caudal rays well developed, the upper ones especially prominent.

Great suborbital leaving a wide naked area below and a narrow one behind. Postorbitals two, the upper narrow and elongate.

Pale yellowish, a silvery lateral streak. Scales of the back dark edged. Chromatophores gathered into the lateral streak posteriorly, many at the caudal base, but no distinct caudal spot.

TYPE.— 17,673 I. U. 43 mm. Brazil: Cucuhy, Rio Negro, on the Colombian Border. 14 February, 1925. Carl Ternetz.

Unique in the massive retrorse dentition.

OTHONOCHEIRODUS, gen. nov.

ὀθόνη a napkin or veil, *χειρ*, hand, and *ὀδών*, tooth, *i.e.* the veiled hand-shaped teeth.

GENOTYPE.— *Othonocheirodus eigenmanni* Myers.

Cheirodontinae. Closely allied to Monotocheirodon. Both these genera differ trenchantly from Holoshesthes, Odontostilbe, and Cheirodon in the severely horizontal gape and the uncovered and lipless teeth of the upper jaw. In the others the gape is oblique and the premaxillary teeth are hidden wholly or partially by the normal upper lip.

To the definition of Monotocheirodon should be added the following characters: — gape horizontal; teeth of both the upper and lower jaws uncovered, lipless.[1] Horizontal extent of the maxillary great, with six or seven teeth; its vertical extent, at the curve, small, scarcely extending down below the line of the base of the mandibular teeth, its end not rounded or free. Caudal lobes unequal, the upper longer.[1]

Othonocheirodus may be described as follows: — adipose present; lateral line complete; predorsal area scaled; caudal naked; suborbital in contact with the preopercle below; caudal lobes equal; accessory caudal rays apparently normal. Teeth 5-pointed, similar in both jaws, contracted at the base, expanded at the tips. Gape horizontal, the horizontal extent of the maxillary small, with two teeth, its vertical extent long, extending far below the line of the bases of the mandibular teeth, its end large, rounded, and free. Premaxillary with four similar teeth on each side, in a single, not angulated series, continuous pos-

[1] These characteristics are not shown in Pearson's figure of *Monotocheirodon pearsoni* Eigenmann, Indiana univ. studies, 1924 (1925), no. 64, pl. 11.

teriorly with the two maxillary teeth. Mandible with six similar 5-pointed teeth on each side, grading down slightly in size posteriorly. Upper jaw lipless. Under jaw with a thin deep lip which rises to cover not only the mandibular teeth but also part or all of the premaxillary teeth.

Othonocheirodus eigenmanni, sp. nov.

Head $4\frac{1}{4}$ in body-length. Depth $3\frac{1}{4}$. Eye $3\frac{1}{3}$, a little less than interorbital, equal to snout. Scales mostly lost, apparently 4–34 to 36–3. Dorsal 9. Anal 14.

Body fairly deep, compressed, more so than in Monotocheirodon. Snout very blunt. Dorsal originating more than an orbit-diameter nearer to caudal base than to snout-tip. Anal inserted on vertical of end of dorsal base. Pectorals not reaching pelvics by three or four scales. Pelvics not quite to anal fin. Adipose inserted behind vertical of end of anal base.

Brownish; a conspicuous black humeral blotch; a dark lateral band, faint anteriorly, ending at caudal base.

Type.— 17,674 I. U. 47 mm. Peru: Rio Cayumba. 1918. W. R. Allen.

Paratypes.— 17,675 I. U. 31,569 M. C. Z. 36–45 mm. Peru: Rio Cayumba. 1918. W. R. Allen.

Named for Dr. Carl H. Eigenmann, who has contributed more than anyone else to our knowledge of the fresh-water fishes of South America.

Elachocharax, gen. nov.

ἐλαχύς, insignificant, and Charax, a genus of characins.

Genotype.— *Elachocharax pulcher* Myers.

Crenuchinae. Mouth small, with scarcely any gape, the maxillary reaching vertical of anterior border of eye. Adipose present. Dorsal long, with 18 rays. Body not notably deep but much compressed, the head especially narrow and the snout pointed. Armature of the cheeks very weak. Frontal fontanel present.

Crenuchus has very wide jaws, a long gape, and an adipose fin. Poecilocharax, which has much narrower jaws than Crenuchus, still has a large gape and long maxillary, while it possesses no adipose. Poecilocharax is certainly not closely related to Crenuchus, and Elachocharax is even more divergent. The latter, and possibly Poecilocharax also, will eventually be removed from Crenuchus and placed near Characidium.

Elachocharax pulcher, sp. nov.

Head equal to depth, $3\frac{1}{2}$ in length to caudal base. Dorsal 18. Anal 8. Lateral line incomplete, 5 or 6 scales with pores. Scales 25 lateral, 6 transverse between dorsal and pelvics.

The long pectorals reach the distant pelvics. Pelvics reach to anal fin. Predorsal and preventral areas rounded, normally scaled. Caudal not deeply forked.

Scales truncate basally, with many lateral striae (circuli) above and below, somewhat similar to those of Poecilocharax, but striae deeper and more evident. The scales of Crenuchus are similar in shape, but the striae are more inclined to be concentric than merely lateral above and below.

Coloration very dark. The scale-borders, where each row touches the row above and below it, are dark, forming zig-zag lines between the series. The body is crossed by eight diffuse wide dark bands, the first behind the pectoral axil, the last at the tail-root. The two in the anal region are extended out across that fin. The one at the tail-root has two small spots in it, which project out on the fin, the entire bar being followed by a colorless area. After this follow some faint caudal bands. The dorsal, whose margin is straight and the rays subequal, has two lengthwise lines near its base. The eye is crossed by two lines, one horizontal from the chin, another vertical from the occiput.

Type.— 17,676 I. U. 21 mm. Venezuela: Caño de Quiribana, near Caicara. May, 1925. Carl Ternetz.

Paratype.— 17,677 I. U. 22 mm. Venezuela: Caño de Quiribana, near Caicara. May, 1925. Carl Ternetz.

A pretty little species, suggestive of the North American Elassoma.

Hyphessobrycon balbus, sp. nov.

Head $3\frac{3}{5}$ in body-length. Depth $2\frac{1}{2}$ (young) to $2\frac{1}{7}$ (adult). Dorsal 11. Anal 19 to 21. Scales 5–31 to 34–$4\frac{1}{2}$. Lateral line stuttering, complete on a few specimens, usually developed on 12 to 20 scales.

Dorsal origin in middle of body-length, slightly behind vertical of origin of pelvics, which are reached by the pectorals. Pelvics reaching not quite to anal fin. Adipose over end of anal. Body deep and much compressed.

Cheeks entirely covered by the great suborbital. Five 5-pointed teeth in the inner series of the premaxillary on each side. Four smaller teeth in the outer row. One wide tooth at upper limit of maxillary.

Exposed surfaces of scales very deep and narrow, with few radial striae, little diverging. Scales over front of anal somewhat irregular and deflected towards the fin.

Dull, dark brownish, the scales prominently bordered with dark. A long vertical dark humeral bar with the suggestion of another a little way behind it. A faint dark lateral streak down posterior part of sides, ending in a slightly darker area at caudal base. A dark line to the tips of the central caudal rays. Dorsal and anal with dusky tips.

TYPE.— 17,678a I. U. 47 mm. Brazil: Planaltina, Lagoa Fervedeira, Goyaz. 14 September, 1923. Carl Ternetz.

PARATYPES.— 17,678 I. U. 31,570 M. C. Z. 23–60 mm. Brazil: Planaltina, Lagoa Fervedeira, Goyaz. 14 September, 1923. Carl Ternetz.

Differing markedly from the other species in the genus in the stuttering lateral line, the peculiar dusky color, the great depth, and numerous other characters. It is not related to any species of Astyanax, in which genus the specimens with a complete lateral line might be wrongly placed.

CREAGRUTUS ATRISIGNUM, sp. nov.

Head 4 in body-length. Depth $3\frac{1}{2}$. Eye 3 in head, slightly less than interorbital. Depth of caudal peduncle 2 in head. Dorsal $9\frac{1}{2}$. Anal 12. Scales $4\frac{1}{2}$–35–3.

Dorsal origin an eye-diameter nearer to snout-tip than to caudal base, over insertion of pelvics. Pectorals not reaching pelvics by two scales. Pelvics almost reach anal fin. Anal origin far behind dorsal base, slightly anterior to vertical of tips of appressed last dorsal ray.

Great suborbital nearly or wholly as wide as eye-diameter, touching lower limb of preopercle but not ankylosed with it, leaving a considerable naked area at the angle and behind. Premaxillary dentition resembling that of *C. beni*. Two maxillary teeth.

Yellowish, scales of the back with dark bases. A narrow silvery lateral band, faint anteriorly, ending in a small caudal spot entirely within the band (sometimes very faint) and extending outward to the end of the middle caudal rays. A dark *horizontal* humeral bar entirely within the lateral band, and another small fainter brown spot (sometimes nearly absent) above and forward of it. Dorsal fin deeply flushed with black, pale basally. Caudal and anal dusky.

TYPE.— 17,679 I. U. 60 mm. Brazil: Upper Rio Maranhão (Upper Tocantins), Goyaz. 11 October, 1923. Carl Ternetz.

PARATYPES.— 17,680 I. U. 31,571 M. C. Z. 59–67 mm. Brazil: Corrego do Monjolo, tributary of the Rio Maranhão. 30 September, 1923. Carl Ternetz.

The black dorsal and pleasing colors well mark this distinctive species.

CREAGRUTUS PHASMA, sp. nov.

Head $4\frac{1}{5}$ in body-length, equal to depth. Eye 3 in head, slightly greater than interorbital. Depth of caudal peduncle $2\frac{3}{4}$ in head. D. 8½ A. 11½ L.l. 38–39

Dorsal originating somewhat more than an eye-diameter nearer to snout tip than to caudal base, directly over insertion of pelvics. Pectorals not reaching pelvics by one or two scales. Pelvics not reaching anal by three scales. Anal inserted far behind dorsal, under tips of depressed last dorsal rays. Adipose inserted over base of last anal ray.

Great suborbital nearly as wide as eye, touching, but not ankylosed to, lower limb of preopercle, leaving a narrow naked border behind. Premaxillary dentition exactly as figured by Eigenmann (Mem. M. C. Z., **43**, pl. 35, fig. 4) for *C. peruanus*.

Yellowish, the scales of the back with a dark border inside a lighter one. A large, conspicuous, vertical, dark humeral crescent (sometimes faint) over a deep black humeral spot entirely within the lateral band. A diffuse silvery band over a plumbeous one, wide anteriorly, narrow and more plainly defined posteriorly. The band ends at caudal base, then continues out to the tips of the central rays as a black line. A yellow spot at the base of upper and lower caudal rays, continued out strongly, forming a border for the dark streak. Caudal slightly dusky above and below the yellow spots. First rays of pelvics and anal milky white. Fins otherwise hyaline.

TYPES.— 17,681 I. U. 61, 65 mm. Venezuela: mouth of the Curamuni, Rio Cassiquiare. 7 March, 1925. Carl Ternetz.

A veritable ghost of the following genus, with which it was taken.

CREAGRUDITE, gen. nov.

κρεαγρευτος, tearing off the flesh, hence Creagrutus, and δίτη, having the force of born of.

GENOTYPE.— *Creagrudite maxillaris* Myers.

Tetragonopterinae. A specialized Creagrutus. Premaxillary teeth in a triple series in the young, formed of an inner series of large tricuspid teeth, four on each side, and a double outer series of three small teeth

on each side, the first and third set out to form the first series and the second one set back to form the second series. There are thus but two teeth, one on a side, in the second series. With age, this second tooth migrates forward and takes its place between the first and third tooth, so that in the adult there are but two series of premaxillary teeth.

The body-form is elongate and very little compressed, the head and jaws being particularly lengthened, so that the fish has a very characteristic physiognomy, resembling, but very distinct from Creagrutus. The snout is as long as the very large eye, and the widened postorbitals nearly equal it. The gape is very great. There is a considerable resemblance of the mouth to that of Bramocharax and of Scissor. The relationship may be in this direction.

The lengthened maxillary sweeps backward and downward in a great concave curve, its horizontal extent nearly twice the vertical. The maxillary is fully toothed to near its end, with twelve strong backward pointing tricuspid teeth.

There are two large tricuspid teeth on each side of the mandible, these grading into a series of nine strong retrorse tricuspid teeth. The snout is pointed so that all of the tooth-series are rather acutely angled in the middle and thence extend almost straight posteriorly.

The cheeks are fully armed with the exception of a narrow border along the vertical limb of the preopercle. The preventral and predorsal squamation is normal, the caudal is naked, and the lateral line complete.

This genus differs from Creagrutus in the dentition, in the long snout, and peculiar maxillary, in the elongated, uncompressed form, and in other characters. In Dr. Eigenmann's synopsis in the American Characidae, it would fall in Hemibrycon, from which it differs in the whole habitus, dentition, maxillary, and long snout.

Creagrudite maxillaris, sp. nov.

Head $3\frac{5}{6}$ in body-length. Depth 5. Eye $3\frac{1}{5}$ in head-length, somewhat greater than interorbital. Dorsal 10. Anal $10\frac{1}{2}$ to $12\frac{1}{2}$. Scales 4–41 to 42–3.

Body long, spindle-shaped, little compressed, greatest thickness $1\frac{1}{2}$ in depth. Eye large, equal to the long snout. Jaws about equal, the lower slightly included. Dorsal origin half an orbit-diameter nearer snout-tip than caudal base, slightly anterior to pelvic insertion in adults, over or slightly posterior to pelvics in younger specimens. Anal inserted under tip of depressed last dorsal ray. Pectoral tips half length

of fin from pelvics. Pelvics not reaching anal by three or four scales. Adipose inserted above last anal rays. Caudal well forked. Anal margin falcate, dorsal edge emarginate.

Yellowish, the scales of the back with a dark border inside a light one. A conspicuous vertical black humeral crescent. A diffuse silvery band, more sharply defined posteriorly, superimposed on a darkish band, ending abruptly at caudal base, discontinued for a short interval, and then continued to the tips of the central rays. A yellow spot at the base of the upper and lower caudal rays, continued faintly out to form a pale border to the caudal bar. Beyond the spots, the caudal is shaded duskily. First pelvic and anal rays milky white; fins otherwise hyaline.

TYPE.— 17,682 I. U. 95 mm. Brazil: Sandbank on the Colombian border, Rio Negro, Cucuhy. 14 February, 1925. Carl Ternetz.

PARATYPES.— 17,683 I. U. 31,572 M. C. Z. 92, 33 mm. Brazil: Sandbank on the Colombian border, Rio Negro, Cucuhy. 14 February, 1925. Carl Ternetz.

PARATYPES.— 17,684 I. U. 49, 58 mm. Mouth of the Curamuni, Rio Cassiquiare. 7 March, 1925. Carl Ternetz.

Creagrutus melanzonus Eigenmann, from the Upper Essequibo and Potaro Rivers in British Guiana, seems to be based on young specimens of this genus, and may stand as *Creagrudite melanzona* (Eigenmann). They differ from young *C. maxillaris* in the scale-count and in the presence of two teeth in the second premaxillary series on each side.

CARNEGIELLA MARTHAE, sp. nov.

Head $3\frac{2}{3}$ in body-length. Depth 2. Dorsal 10. Anal 22 or 23. Scales 26.

Lower profile of the disc extending downward and backward rather steeply and with but a slight curve, the lower portion somewhat truncated. Maxillary with a single tooth. Nine premaxillary teeth on each side in a single series. Lateral line incomplete. No adipose.

A dark line from above the first third of the pectoral to the caudal base, bounded above by a wider light line and below by a narrower one. Back above this darkly mottled, the scale-edges darker. A dark band around lower jaw to eye and another a little lower down. Two dark lines backward from eye across opercle, and another following the curve of the suborbital. Entire lower edge of body, from caudal to chin, bounded by a narrow dark line, this forking on the breast, one branch on each side, leaving a narrow median light V-shaped area below chin.

This dark outline is bordered interiorly, from caudal to the beginning of the front profile of the breast, with a wider light area. Breast with a series of six fine curved dark lines, with wider interspaces, starting anteriorly and curving backward and upward, parallel with the lower edge of the opercle, somewhat converging, and ending above and behind the pectoral insertion. The sides are finely mottled with dark and this causes the lines to become obsolete on the middle of the sides in most specimens. The lower ones of the six are nearly always interrupted. At the point where the truncated lower profile starts upward towards the caudal, the light inner margin is curved inward, with an upper heavy border of crowded chromatophores, forming an incipient light spot. Pectorals mottled with dusky. Scales bluish burnished silvery. These are the typical colors. They are varied somewhat on most of the specimens by slight differences in mottling.

TYPE.— 17,685 I. U. 29.5 mm. Venezuela: Caño de Quiribana, near Caicara. May, 1925. Carl Ternetz.

PARATYPES.— 17,686 I. U. 31,573 M. C. Z. 27–32 mm. Venezuela: Caño de Quiribana, near Caicara. May, 1925. Carl Ternetz.

PARATYPES.— 17,687 I. U. 30, 31 mm. Venezuela: Caño de Quiribana, opposite Pan de Azucar. 7 May, 1925. Carl Ternetz.

PARATYPE.— 17,688 I. U. 29 mm. Venezuela: Creek into Laguna San Raphael, Caicara. 23 April, 1925. Carl Ternetz.

This pretty and distinctive little flying fish is one of the most unexpected novelties obtained by Dr. Ternetz. It differs trenchantly from the only other species of the genus, *C. strigata*, in the low scale and anal ray counts, in the truncated lower profile of the disc, and in the similarly patterned, but quite distinct coloration; *C. marthae* entirely lacks the bold wavy cross-bands of *C. strigata* and is considerably smaller. An average adult *C. strigata* from Iquitos measures 40 mm.; I have compared it with *C. strigata* from Belem, Pará (Ternetz), Iquitos (Allen), and Tumatumari, British Guiana (Eigenmann); *C. marthae* apparently replaces *C. strigata* in the Orinoco, but why the latter should occur in the Essequibo and the Marañon and not in the Orinoco, when the latter is openly connected with the Amazon system through the Cassiquiare, is an interesting question. Dr. Ternetz does not appear to have obtained any Gasteropelecinae in the Upper Rio Negro or Upper Orinoco.

LONCHOGENYS, gen. nov.

λόγχη, lance, and γένυς, cheek.

GENOTYPE.— *Lonchogenys ilisha* Myers.

Characinae. Allied to Acanthocharax, Heterocharax, and Xiphocharax.

Lateral line complete. Anal origin beneath the dorsal fin. Scales large, cycloid. A strong acute point on the angle of the interopercle. Mandibular teeth in two series. Tooth-bearing margin of the mandible trilobed, the central lobe with a large and a small canine on each side of it in the inner series, the side lobes each with three large retrorse canines at their highest point, these being in the outer series. Upper jaw scalloped to receive the central lobe, the depression with two canines and a few smaller teeth at each side of it. Set in front of these canines is an even row of small teeth, forming two premaxillary series at this portion of the jaw. Maxillary-premaxillary junction a right angle, the maxillary immediately curving down and sweeping backward. Maxillary fully toothed, without a canine, the upper teeth enlarged and grading downward.

Head much less heavy and gape considerably less than in Acanthocharax. Nape emarginate, not angulated. Snout broadened, as in Heterocharax and Xiphocharax. Cleithrum not notched. Opercle with a deep notch in its upper border, deeper than that of Heterocharax, and corresponding to a slight emargination in the other two genera.

This genus is far removed from Acanthocharax, much nearer Xiphocharax, and closest to Heterocharax. The four genera may be arranged as follows:—

a. Genera of Characinae with the interopercle drawn out into a sharp point or spine.

b. Maxillary-premaxillary junction very obtusely angled, the maxillary oblique; a small canine at the upper end of the toothed maxillary; snout not broadened; nape angulated; scales small; cleithrum notched; opercle entire; cheeks mostly naked; interopercle with a sharp spine.

Acanthocharax Eigenmann.

bb. Maxillary-premaxillary junction nearly a right angle; the maxillary with the upper teeth enlarged, but no canine; snout broadened; nape emarginate but not angled.

c. Cheeks naked; cleithrum notched; opercle entire; scales very small; maxillary vertical; interopercle with a sharp point but not a spine.....*Xiphocharax* Fowler.

cc. Cheeks fully armed; cleithrum not notched; opercle notched; scales large; maxillary oblique.

d. Ramus of mandible trilobed; premaxillary teeth partly in two series; interopercle with an acute point; scales squared basally with a notch.....*Lonchogenys* Myers.

dd. Ramus of mandible not lobed; premaxillary teeth strictly in a single series; interopercle with a sharp spine; scales deep, oval, basally entire....*Heterocharax* Eigenmann.

LONCHOGENYS ILISHA, sp. nov.

Head $3\frac{1}{2}$ in body-length. Depth $2\frac{3}{4}$. Eye $2\frac{1}{3}$ in head, much longer than snout. Dorsal 11. Anal 35 to 38. Scales 6–34 to 35–4.

Nape slightly emarginate, not angulated. Dorsal originating very slightly nearer to caudal base than to snout-tip. Pelvics half an orbit-diameter anterior to vertical of dorsal origin. Pectorals not quite to pelvics, which scarcely reach anal. Adipose above end of anal. First few anal rays prolonged, giving a falcate margin to the first part of the fin. Dorsal high and pointed. Caudal well forked, lobes pointed. Occipital process long and pointed. Maxillary reaches nearly to below center of pupil. Predorsal line compressed, possibly nearly naked, but with scattered irregular scales; this hard to determine precisely because of the black predorsal line. Scales at side of predorsal line, particularly anteriorly, becoming very oblique. Anal with a basal sheath of scales, more numerous forward. Caudal scaled. Great suborbital covering all but a very narrow line of the cheeks.

The scales are most remarkably different from those of Acanthocharax (*cf.* Cockerell, Ann. Carnegie mus., 1914, **9**, p. 111) and of Heterocharax, with both of which I have directly compared them. The scales of Heterocharax are exactly like those of Acanthocharax except that they are less deep. The scales of Lonchogenys are rounded apically, more or less square basally, not exceptionally deep, and of course much larger than those of Acanthocharax. The nucleus is far basad, and the basal border is *notched* twice medially and once below, the circuli following the indentations. There are two widely separated strong apical radii, delimiting the apical sector of the scale, this area lacking circuli. Between these radii are several fine, irregular, connected radii, few reaching the margin. The circuli of the basal portion run

around and go off the scale parallel to the two strong delimiting apical radii.

Coloration brilliant silvery; a plumbeous lateral band. Fins hyaline, slightly dark tipped. Midline of back, occiput, upper iris, and tips of jaws black. Scales dark edged on back. A dusky line along anal base. A few chromatophores gathered into faint lateral scale-lines below.

TYPE.— 17,696a I. U. 67 mm. Brazil: Sandbank on the Colombian border, Rio Negro, Cucuhy. 14 February, 1925. Carl Ternetz.

PARATYPES.— 17,696 I. U. 31,574 M. C. Z. 67–74 mm. Brazil: Sandbank on the Colombian border, Rio Negro, Cucuhy. 14 February, 1925. Carl Ternetz.

There are many specimens from other localities. It is a common species in the Upper Rio Negro. That this species passes through the Cassiquiare to the Orinoco is shown by a single specimen of 77 mm. from Laga Tama-Tama, Bifurcation, Upper Orinoco.

A replica in miniature of the clupeid genus Ilisha.

PIMELODIDAE.

BRACHYRHAMDIA, gen. nov.

βραχύς, short, and Rhamdia, a genus of Pimelodidae.

GENOTYPE.— *Brachyrhamdia imitator* Myers.

Pimelodinae. Allied to Pimelodella.

Body rather compact; somewhat compressed and deep. Occipital process forming a bridge with the dorsal plate. Dorsal and pectoral spines pungent, those of the latter with thorns along the basal half of the posterior edge. Humeral process spine-like. Fontanel not continued behind eyes, without a bridge. Eyes with free orbital rims. Barbels normal. Caudal deeply forked. Head entirely covered with skin.

BRACHYRHAMDIA IMITATOR, sp. nov.

Head $3\frac{1}{2}$ in body-length. Depth $3\frac{1}{2}$. Eye $3\frac{1}{4}$ in head, circular. Dorsal I, 6. Anal 9.

Body in general shape like Corydoras, the head deep and the skull arched. Maxillary barbel lying in a groove below eye, long, reaching tip of anal rays. Outer mental barbel nearly reaching tip of pectoral spine. Inner mental barbel shorter. Premaxillary teeth in a band, without backward projecting angles. Pectoral spines very slightly

longer than dorsal spine, the latter smooth, the former with eight strong thorns along the basal half of the posterior margin. Dorsal origin $1\frac{1}{2}$ times as far from caudal base as from snout-tip. Pelvics inserted on vertical of next to last dorsal ray. Adipose fin high, the length of its base slightly less than length of dorsal spine.

Dull brownish yellow, light on belly. Posterior sides finely mottled. A black masque-like zone from occiput down over eyes and across cheek. Another wide black zone from dorsal origin to humeral process, this running up and involving the spine and first ray of dorsal.

TYPE.— 17,695 I. U. 50 mm. Venezuela: Caño de Quiribana, near Caicara. May, 1925. Carl Ternetz.

Taken with, and very similar in color and form to *Corydoras melanistius* Regan.

DORADIDAE.

ORINOCODORAS, gen. nov.

Orinoco and Doras, the typical genus of the family.

GENOTYPE.— *Orinocodoras eigenmanni* Myers.

Allied to Platydoras and Lithodoras. Width at cleithrum greater than head-length. Adipose fin continued forward very slightly into a keel, fairly high; without the keel it is as long as anal base. Dorsal spine strongly serrate in front and behind, the posterior serrae longer. Preorbital bones not serrate. Caudal peduncle entirely covered above and below with laminate plates. Lateral scutes very narrow, as wide as eye, leaving the greater part of the sides naked; one in feeble contact with the dorsal plate. Swim-bladder double, without diverticula, the posterior part small and heart-shaped. Barbels simple. Differs from Lithodoras in the armored peduncle and more numerous scutes, and from Platydoras in the narrow scutes.

ORINOCODORAS EIGENMANNI, sp. nov.

Head $3\frac{1}{3}$ in body-length to last scute. Eye $6\frac{1}{3}$ in head. Dorsal I, 5. Anal, 11. Lateral scutes 29, very even, those on the peduncle very slightly larger than the others. Dorsal spine nearly reaches beginning of adipose keel. Pectoral spines reaching pelvics. Coracoid process covered with skin. Fontanel continued as a groove to the dorsal fin. Mouth terminal. Teeth in a band, none enlarged. Maxillary barbel reaching to cleithrum. Mental barbels four, short. Eye just anterior

to middle of head. Profile from dorsal to snout-tip an almost uninterrupted curve. Caudal forked.

Blackish; a white line down the row of scutes, continued faintly forward to eye. Dorsal lightish mottled, the first soft ray and its membrane black. Caudal mottled lightish, with two longitudinal black bands, these continuing the black of the sides above and below the white scutes. Underside of head and coracoid process white, rest of underside darkly mottled.

TYPE.— 17,689 I. U. 89 mm. Venezuela: Caño de Quiribana, near Caicara. 13 May, 1925. Carl Ternetz.

PARATYPES.— 17,690 I. U. 31,575 M. C. Z. 74–81 mm. Venezuela: Caño de Quiribana, near Caicara. Carl Ternetz.

Named for Dr. Carl H. Eigenmann, who recently placed the classification of the Doradidae on a firm foundation.

ASPREDINIDAE.

BUNOCEPHALUS SALATHEI, sp. nov.

Depth of head $2\frac{1}{2}$ in its width, which is half again greater than its length. Upper jaw slightly longer than lower. Cranial ridges prominent, interorbital deeply concave, half as wide as corresponding width of head. Maxillary barbels reach almost to end of coracoid processes. Pectoral spine slightly curved, with strong serrations on both sides, not reaching pelvic fin-origin by more than half head-length. Coracoid processes parallel or slightly divergent, half as long as their distance apart, reaching as far back as middle of pectoral spine. Dorsal 4, its origin $1\frac{3}{5}$ times as far from caudal base as from snout tip. Anal $7\frac{1}{2}$. Caudal peduncle little or not at all compressed, very slender, its length $4\frac{2}{5}$ in length to caudal base. Skin finely tubercular.

Upper half of head and body light grayish tan, lower half blackish brown. Dorsal fin dark with a lightish border. Venter light. Two of the paratypes show traces of five dark cross-bands, near the end of the pectoral spines, at the dorsal fin, above the anal origin, above its end, and at the caudal base.

TYPE.— 31,583 M. C. Z. 48 mm. Brazil: Morro Ajudo, "about 100 km. from Rio de Janeiro." Brocca and Salathé.

PARATYPES.— 101 Coll. G. S. M. 26–33 mm. Brazil: Morro Ajudo, "about 100 km. from Rio de Janeiro." Brocca and Salathé.

Allied to *B. doriae Blgr.* differing in the anterior dorsal, uncompressed peduncle, shorter dorsal, and in color.

CALLICHTHYIDAE.

Corydoras potaroensis, sp. nov.

Corydoras punctatus Eigenmann (in part *nec* Bloch) Mem. Carnegie mus., 1912, **5**, p. 220, pl. 24, fig. 3. Creek below Potaro Landing and Erukin.

In his account of *C. punctatus*, Eigenmann apparently included specimens of two distinct species, neither of them the true *C. punctatus* of Bloch. Bloch's figure represents a fairly elongate Corydoras with a distinct black spot on the upper part of the anterior dorsal rays, with but few small dots on the sides, with no trace of a black band across the head and eyes, and with rows of dots on the caudal. It would fall in the group *mm.* of Mrs. Ellis's synopsis (Ann. Carnegie mus., 1913, **8**, p. 398). Regan, whose paper (Ann. mag. nat. hist., 1912, ser. 8, **10**, p. 209–220) appeared almost simultaneously with Eigenmann's, recognized that the one Guiana species he had was different from *C. punctatus*, and named it *C. melanistius*. I identify the more common species of Eigenmann's collections with *C. melanistius*, while the other I describe as new; *C. melanistius* is a very deep species (the depth $2\frac{1}{3}$ to $2\frac{1}{2}$). Measuring in a horizontal plane (not over the curve of the back), the dorsal origin is midway between the vertical of the snout-tip and the tip of the adipose spine. The spine and first three dorsal rays and their membranes are black, this color extending down in a large patch on the upper part of the sides. A dark band (though never so dark as the dorsal spot) extends from the nape down through the eye onto the suborbital and opercle. Sides covered with many small dark spots, those above the lateral line of scute-junctures slightly larger and more disposed in lateral rows than those below. Fins pale, faded, but with indications in some specimens (Konawaruk) of vertical rows of spots on the caudal and anal. I have specimens from Kumaka, Malali, Konawaruk, and mud-flats on the Demerara below Wismar. All these are much paler in coloration than specimens from Caño de Quiribana, near Caicara, Orinoco, possibly due to fading, but more probably partly due to a really lighter color of the Guiana fishes. The Orinoco specimens have the caudal with bold rows of spots.

The new species, represented by Eigenmann's figure and his specimens from Erukin and Potaro Landing, is more elongate. Depth $2\frac{4}{5}$ to 3. Measuring in a horizontal plane, the dorsal origin is midway between the vertical of the snout-tip and the *base* of the adipose spine. There is a masque-like black zone over the eyes as in *C. melanistius*, but the dorsal coloration differs widely. The entire dorsal fin, with its rays and

membranes, is black, paling toward the margin, but this color *does not extend on the dorsal region of the body*. There are *no spots on the body or fins*, the only markings being faint lines running parallel to the vertical plate-sutures.

TYPES.— 11,984 I. U. 31,576 M. C. Z. 43–46 mm. Br. Guiana: Creek below Potaro Landing. C. H. Eigenmann.

LORICARIIDAE.

OTOTHYRIS, gen. nov.

οὖς, ὠτός, ear, and θύρις, lattice.

GENOTYPE.— *Otothyris canaliferus* Myers.

Hypoptopomatinae. Allied to Otocinclus, but the cranium sculptured is a most remarkable manner. Eye set high in head, without the projecting tongue of iris to the center of the pupil seen in Otocinclus.

Supraoccipital with two low spinescent keels at the summit, one on each side, parallel, diverging anteriorly and posteriorly. Out of the posterior trough of these rises a third median spinescent keel, higher than the other two and rising to the posterior tip of the supraoccipital, where it ends. The temporals are perforate, pierced by three or four large openings (sometimes confluent into one), these extending upward into a passageway which opens externally above into two small holes. The sutures of the bones are so obscured that I shall not attempt to differentiate them further. A keel starts on each side of the snout and extends in a concave curve upward to, and encircling, the eye, thence extends backward and upward above the perforations described, ending in a pointed backward projection of what likely is the epiotic. Occasionally there is one perforation above this keel, this at its angle with the posterior border of the circumorbicular ridge, and extending downward into the same passageway as the others. Below the posteriorly projecting point of the lateral cephalic keels is a cavernous bone-surrounded opening into a large chamber at the side of the anterior vertebrae. This apparently does not connect with the passageway of the perforations, agreeing in this with specimens of *Otocinclus affinis* Steindachner from Rio de Janeiro. Thus it apparently differs from the structure in *O. vestitus* as described by Cope, although he may have been mistaken in that all of the perforations enter the large cavity.

The bony arched roof of the chamber on each side, between the lateral and supraoccipital keels, bears four very weak longitudinal

keels. There is a short double keel originating at the snout-tip and fading between the great bone-rimmed nasal depressions.

The adipose fin and its spine are absent. There are three large plates on the preventral area, one at each side anteriorly and one posteriorly between the pelvics. The rest of the breast is naked save occasionally for one or two rudimentary accessory plates. Lower transverse area of clavicles and coracoids exposed, rough.

This genus differs from Otocinclus in the rugose and much keeled upper surface of the head, and in the reduced number and peculiar structure of the temporal perforations and their canals.

Otothyris canaliferus, sp. nov.

Dorsal I, 4. Anal I, 5. Lateral plates 21.

Summit of postdorsal region depressed, with a row of spines along each side. A median series of scutes down the side. Postanal region depressed, flanked on each side by a row of spines, with another double row down its center. Dorsal originating very slightly posterior to vertical of origin of pelvics. Pectoral spines extending nearly to end of pelvics. Caudal injured, possibly truncate in life.

Ornately mottled, a diffuse brown band over back at dorsal origin and another at its end. Caudal peduncle encircled by a diffuse band. A lateral brown area down the sides. A conspicuous rounded dark brown spot occupying the center of the caudal fin.

Types.— 87 Coll. G. S. M. 31,577 M. C. Z. 30 mm. Brazil: hills vicinity Rio de Janeiro. 1924. R. Brocca.

I cannot identify this species with any described from southeastern Brazil, though there is a possibility that it will prove identical with one of Ribeiro's species of Otocinclus.

PYGIDIIDAE.

Glanapteryx, gen. nov.

γλανις, the catfish of Aristotle; α, privative, without; and πτέρυξ, wing or fin.

Genotype.— *Glanapteryx anguilla* Myers.

Pygidiinae. Body eel-shaped, wholly finless excepting for small rudimentary pectoral and pelvic flaps and a caudal fringe. No mental barbels. Nasal, rostral, and maxillary pairs of barbels present. Cheeks without spines. Teeth small, apparently conical, in both jaws.

Glanapteryx anguilla, sp. nov.

Body cylindrical anteriorly, compressed and slightly deeper in the caudal region. Eyes small and imbedded in the skin, about thrice one's diameter apart, far forward in the head near the nasal barbels. Head small and flattened, its length equal to depth of anterior part of body, which is contained about fifteen times in the body-length. Nasal barbels reaching end of head, rostral and maxillary barbels slightly longer.

No traces of dorsal or anal fins are visible. The pectorals are reduced to useless inconspicuous fleshy flaps. The caudal fin, with its many accessory rays, is present as a narrow fringe around the caudal end of the body, rounded-acuminate at the tip. What may be flap-like remnants of the pelvic fins are present at each side of the anus. A dissection to ascertain this has not been made as the Type is unique. The caudal region, from vent to caudal tip, is contained $3\frac{2}{3}$ times in the total length of the fish.

Uniform dark brown, lighter beneath.

Type.— 17,700 I. U. 42 mm. Brazil: rock-pools below São Gabriel Rapids, Rio Negro. 1 February, 1925. Carl Ternetz.

This unique specimen was in a vial full of young *Synbranchus marmoratus*, and it was not until I noticed one of the supposed Synbranchus to have barbels that this peculiar species was discovered. It is undoubtedly a burrowing type and is quite the most remarkable form of the subfamily so far discovered.

Ochmacanthus alternus, sp. nov.

Head $5\frac{1}{2}$ in body-length. Depth $5\frac{1}{3}$. Dorsal 8. Anal 8. Pectoral 6. Eye $4\frac{1}{2}$ in head, longer than snout, less than interorbital.

Maxillary barbels to interopercular spines; lower barbels much shorter, with a membranous flap below. Width of head equal to length with opercular spines. Ten or eleven interopercular spines. About ten opercular spines. Teeth small, in minute series. A prominent pectoral pore. Pelvics inserted midway between head and caudal base. Anal fin-origin but slightly behind that of dorsal. Caudal rounded-truncate, with many accessory rays, not tadpole-like.

Markings very variable, typically a double or triple series of large, irregular, alternating blotches with narrow interspaces, the spots usually partially coalescing forward on the back. Some specimens have the pattern broken up into comparatively fine mottling, but all show a

trace of the typical pattern. Caudal mottled, in some with a trace of a dark median streak to the tip. Venter pale, unmarked.

Types.—17,697 I.U. 31,578 M. C. Z. 34–40 mm. Venezuela: Caño de Quiribana, near Caicara. May, 1925. Carl Ternetz.

A larger headed, more compact species than *O. orinoco*, well distinguished by its bold dark pattern.

Ochmacanthus orinoco, sp. nov.

Head 6 in body-length. Depth $6\frac{2}{3}$. Dorsal 8. Anal 7. Pectoral 5. Eye 4 in head, equal to snout and interorbital.

Maxillary barbels reaching middle of interopercular spine-patch, lower barbels much shorter, with a membranous flap below. Head flattened, its width equal to its length with opercular spines. Ten large spines in interopercular patch, ten or twelve in the opercular patch. Teeth of premaxillary very small, in fine series as in Stegophilus. A prominent pectoral pore. Pelvics inserted midway between caudal base and front of interopercular spine-patch. Anal origin under last part of dorsal base. Caudal rounded, with many accessory rays, not tadpole-like.

Back mottled. A single series of oblong dark patches of unequal length down the middle of the sides to caudal base.

Type.— 17,698 I. U. 46 mm. Venezuela: Playa Matepalma, Orinoco. 2 April, 1925. Carl Ternetz.

Stegophilus septentrionalis, sp. nov.

Head $5\frac{4}{5}$ in body-length. Depth $6\frac{3}{4}$. Dorsal 8. Anal 6. Pectoral 7. Eye equal to snout and interorbital, 4 in head.

Maxillary barbels reaching the interopercular spines, lower barbel much shorter; an attached membranous flap below the lower barbel. Head flat below, its width equal to head without the opercular spines. Ten or eleven long sharp hooks in two irregular series on the interopercle. About twelve shorter hooks irregularly arranged at tip of opercle. Teeth in several minute, even series in the premaxillaries, less numerous than in Haemomaster; two series on the lips. Pelvic fins inserted midway between caudal base and pectoral tips. Anal inserted under end of dorsal base. One or two prominent accessory dorsal and anal rays. Caudal emarginate.

Whitish; a series of oblong dark blotches down the middle of the side, these becoming obsolete forward. An indefinite series of small,

diffuse streaks above the side series anteriorly, and another on midline of back. A small black spot on base of central caudal rays, continued outward as a straight black line to the end of the central rays. Upper and lower caudal tips mottled.

TYPE.— 17,699 I. U. 44 mm. Venezuela: Santa Barbara, Orinoco. 4 April, 1925. Carl Ternetz.

Very close to the only other known species of the genus, *S. insidiosus* Reinhardt, from southeastern Brazil apparently differing only in one anal ray, the emarginate caudal, and the distinctive color.

HAEMOMASTER, gen. nov.

αἷμα, blood, and μαστηρ, seeker.

GENOTYPE.— *Haemomaster venezuelae* Myers.

Stegophilinae. Accessory caudal rays fairly numerous, but not conspicuous. Gill-membranes united, confluent with the isthmus. Opercle with five spines. Caudal very slightly emarginate. Pelvic fins inserted nearly twice as far from snout-tip as from caudal base. Eyes large, staring, *far apart* and *lateral*, not superior and close together as in related genera. Colorless except for a caudal stripe.

In the synopsis of genera in Eigenmann's review of the family, this genus would fall in Stegophilus, but the wide-set, staring, lateral eyes are seen in no other member of the subfamily. It cannot well be Pleurophysus Ribeiro.

HAEMOMASTER VENEZUELAE, sp. nov.

Head $7\frac{1}{2}$ in body-length. Depth $6\frac{2}{3}$ to $7\frac{1}{2}$. Dorsal 7. Anal 5. Eye $3\frac{1}{2}$ in head, 2 in interorbital.

Teeth of upper jaw imbedded in soft flesh and very difficult to see except in dry specimens. The tooth-bearing area is very wide and extends to the sides of the mouth. The teeth are extremely fine and are disposed in many even series, the outer one along the lip. As many as fifteen of these series can be counted. In the middle there is a patch of enlarged retrorse teeth. In the mandible the teeth are similar, in extremely fine rows, less numerous than in the upper jaw, and there appears to be no enlarged central patch. The outer series is along the lip.

A very short maxillary barbel, scarcely reaching hind border of eye. Interopercular spines five, four large and one very small one above. Opercular spines six, four large ones in the second series, two smaller in the first. Dorsal inserted above middle of appressed pelvics. Anal

inserted below end of dorsal base. Pelvics nearly twice as far from snout-tip as from caudal base. Head very flat, body compressed posteriorly.

Body colorless. Eyes dark. A dark line from middle of sides below dorsal, growing black at caudal base, where it widens slightly, and extending out to the tips of the central caudal rays. Occiput dark.

TYPE.— 17,705 I. U. 61 mm. Venezuela: Playa Matepalma, Orinoco. 2 April, 1925. Carl Ternetz.

PARATYPES.— 17,706 I. U. 49, 58 mm. Venezuela: Santa Barbara, Orinoco. 4 April, 1925. Carl Ternetz.

PARATYPES.— 17,707 I. U. 31,579 M. C. Z. 55–66 mm. Venezuela: Playa Tama-Tama, Bifurcation, Orinoco. 14–16 March, 1925. Carl Ternetz.

URINOPHILUS DIABOLICUS, sp. nov.

Head $6\frac{3}{4}$ in body-length. Depth $8\frac{3}{4}$. Dorsal 7. Anal 8. All rays visible counted. Pectoral 7. Eye 6 in head with opercular spines, just anterior to middle of head-length.

Maxillary barbel extending not quite to tip of interopercular spines, lower barbel rudimentary. Interopercle with a single greatly enlarged spine and a very few (one or two) tiny complementary ones. Opercular patch of spines rudimentary, hidden beneath the skin and not projecting. Five premaxillary teeth in a convex semicircle, the central one largest. Mandibles widely separated, each with a patch of small teeth. Pelvic fin-origin midway between pectoral tip and caudal tip. Anal origin beneath middle of dorsal. Dorsal origin twice as far from interopercular spine-patch as from caudal base. Caudal peduncle slender, with supplementary rays inconspicuous. Caudal truncate or slightly emarginate.

Brownish, with fine darker brown chromatophores on back.

TYPE.— 17,701 I. U. 48 mm. Peru: Iquitos. September, 1920. W. R. Allen.

Dr. Allen found this specimen (called "Carnero" in Peru) halfway buried in the belly of a large river catfish, "Doncella" (*Pseudoplatystoma*). It had burrowed directly through the body-wall and was distended with blood.

This species is much less elongate than *U. sanguineus* (Eigenmann) and *U. erythrurus* Eigenmann.

CYPRINODONTIDAE.

Rivulus beniensis, sp. nov.

Rivulus strigatus Pearson, (*nec* Regan) Indiana univ. studies, 1925, no. 64, p. 51.

Allied to *R. strigatus*. Scales 34 or 35. Dorsal 7. Anal 11 or 12. Anal ending below middle of dorsal. Depth $4\frac{2}{3}$. Male with dark brown longitudinal lines between the scale-rows and no caudal ocellus. The light interspaces were red in life. Fins darkish, a basal line on anal fin. Female with traces of the lateral dark lines, but this developed into a regularly mottled pattern which forms more or less well-defined squarish light areas on the lower posterior part of the sides. A very irregular dark streak from under jaw, through eye, to above pectoral. Fins speckled, anal dark edged. A very large black caudal ocellus in the female.

Rivulus beniensis beniensis, subsp. nov.

Head 4 in body-length. Dorsal fin originating twice as far from vertical limb of preopercle as from caudal base.

Types.— 17,259 I. U. 31,580 M. C. Z. 24–40 mm. Bolivia: Ivon, Rio Beni. February, 1922. N. E. Pearson.

Rivulus beniensis lacustris, subsp. nov.

Head $4\frac{1}{2}$ to $4\frac{2}{3}$ in body-length. Dorsal fin originating twice as far from middle of pectoral as from caudal base.

Types.— 17,258 I. U. 31,581 M. C. Z. 30–42 mm. Bolivia: Lagoons along shores of Lake Rogoagua. November, 1921. N. E. Pearson.

Rivulus strigatus lacks a caudal ocellus in both male and female and the pattern consists of opposed oblique bars of dark red and blue meeting at the midline of the sides, less bright in the female. Living individuals of *R. strigatus* are very different from *R. beniensis*.

ELEOTRIDIDAE.

Microphilypnus, gen. nov.

μικρος, small, and Philypnus.

Genotype.— *Microphilypnus ternetzi* Myers.

Eleotridinae. Gill-openings extending forward to below hind border or center of pupil. Isthmus moderately narrow. Vomerine teeth ap-

parently absent. Skull without ridges posteriorly, slightly ridged or irregular anterior to orbits. Interorbital very narrow. Head and snout more or less elongate. Lower jaw projecting. Scales large. Opercles and occiput scaled. Cheeks and breast naked. Size minute.

Distinguished from Philypnus by the minute size, large scales, and unridged skull. These are the first small river gobies to be reported from the interior of South America.

Microphilypnus ternetzi, sp. nov.

Head $3\frac{2}{3}$ in body-length. Depth $5\frac{2}{3}$. Eye $3\frac{2}{3}$ in head. Dorsals V, 8. Anal 7. Scales 29 lateral, 7 between dorsal and anal.

Gill-openings extending to opposite hind border of pupil. Snout rather short, shorter than eye. Lower jaw not extremely prognathous. Maxillary extending backward to beneath anterior border of pupil. Scales ctenoid. Lateral line absent. Tongue emarginate or notched at tip. No bony point on end of lower limb of preopercle, below eye. No ridge before eye.

Scales dark edged, some with a spot on the posterior margin. Head and opercles dark spotted. A dark line midventrally, from isthmus to caudal, expanding at intervals into small elongate spots.

Types.—17,702 I. U. 31,582 M. C. Z. 14–20 mm. Venezuela: Caño de Quiribana, near Caicara. May, 1925. Carl Ternetz.

In a 20 mm. female, numerous, large, yellow ova can be seen through the abdominal wall. This species vies with Eviota and Mistichthys as the smallest known vertebrate.

Microphilypnus amazonicus, sp. nov.

Head $3\frac{1}{2}$ in body-length. Depth 6. Eye 3 in head. Dorsals VI, 8. Anal 8. Scales about 27 lateral,[1] 6 or $6\frac{1}{2}$ between dorsal and anal.

Gill-openings extending to opposite hind-border of pupil. Snout rather short, shorter than the eye. Eye very large, elongate-oval. Lower jaw not extremely prognathous. Maxillary extending backward to beneath anterior border of pupil. Scales ctenoid. Lateral line absent. Tongue large, shallowly but widely bifid at the end. A bony point on end of lower limb of preopercle, below eye. Anterior border of orbit raised into a high bony ridge.

Yellowish; a series of dark spots down the middle of the side, one on

[1] Approximate number. Actual number possibly less. Scales mostly lost.

every third scale. Fins spotted. A line downward from eye to edge of under jaw.

TYPE.— 17,703 I.U. 24 mm. Brazil: Igarapé do Mai Joana, Manáos. 12 December, 1924. Carl Ternetz.

This species and the next are probably not congeneric with *M. ternetzi* or with each other, but I hesitate to erect new genera on the poor material available.

MICROPHILYPNUS MACROSTOMA, sp. nov.

Head $3\frac{2}{5}$ in body-length. Depth 5. Eye $3\frac{1}{4}$ in head. Dorsals V, 10. Anal 10. Scales 24 lateral, 5 between dorsal and anal.

Gill-openings extending forward almost to opposite end of maxillary. Head elongate, low, very pointed, snout long but shorter than the large eye. Lower jaw extremely prognathous, the lower dentition exposed. Maxillary extending backward to beneath center of pupil. Scales ctenoid. Lateral line present in the form of pits or elongate indentations. Tongue large, squared or slightly emarginate at the end. A bony point on end of lower limb of preopercle, below eye. Anterior border of eye with a ridge which is raised into a blunt excrescence at one point.

Yellowish, faintly speckled.

TYPE.— 17,704 I. U. 20 mm. Brazil: Igarapé do Mai Joana, Manáos. 23 December, 1924. Carl Ternetz.

Very probably the type of a distinct genus.

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The following Publications of the Museum of Comparative Zoölogy are in preparation:—

Reports on the Results of Dredging Operations in 1877, 1878, 1879, and 1880, in charge of Alexander Agassiz, by the U. S. Coast Survey Steamer "Blake," as follows: —

A. E. VERRILL. The Alcyonaria of the "Blake."

Reports on the Results of the Expedition of 1891 of the U. S. Fish Commission Steamer "Albatross," Lieutenant Commander Z. L. Tanner, U. S. N., commanding, in charge of Alexander Agassiz, as follows: —

K. BRANDT. The Sagittae.
K. BRANDT. The Thalassicolae.
O. CARLGREN. The Actinarians.
W. R. COE. The Nemerteans.
REINHARD DOHRN. The Eyes of Deep-Sea Crustacea.
H. J. HANSEN. The Cirripeds.
H. J. HANSEN. The Schizopods.
———. The Ascidians.
S. J. HICKSON. The Antipathids.
P. SCHIEMENZ. The Pteropods and Heteropods.
H. B. WARD. The Sipunculids.

Reports on the Scientific Results of the Expedition to the Tropical Pacific, in charge of Alexander Agassiz on the U. S. Fish Commission Steamer "Albatross," from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., commanding, as follows:—

G. W. MÜLLER. The Ostracods.
MARY J. RATHBUN. The Crustacea Decapoda.
G. O. SARS. The Copepods.
L. STEJNEGER. The Reptiles.
———. The Corals, Recent and Fossil.

PUBLICATIONS

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY

AT HARVARD COLLEGE.

There have been published of the BULLETIN Vols. I. to LIV., LVI. to LXV., and LXVII.; of the MEMOIRS, Vols. I. to XLII., and also XLIV. to XLIX.

Vols. LV., LXVI., LXVII. and LXVIII., LXIX. of the BULLETIN, and Vols. XLIII., L., LI., and LII. of the MEMOIRS, are now in course of publication.

The BULLETIN and MEMOIRS are devoted to the publication of original work by the Officers of the Museum, of investigations carried on by students and others in the different Laboratories of Natural History, and of work by specialists based upon the Museum Collections and Explorations.

The following publications are in preparation: —

Reports on the Results of Dredging Operations from 1877 to 1880, in charge of Alexander Agassiz, by the U. S. Coast Survey Steamer "Blake," Lieut. Commander C. D. Sigsbee, U. S. N., and Commander J. R. Bartlett, U. S. N., commanding.

Reports on the Results of the Expedition of 1891 of the U. S. Fish Commission Steamer "Albatross," Lieut. Commander Z. L. Tanner, U. S. N., commanding, in charge of Alexander Agassiz.

Reports on the Scientific Results of the Expedition to the Tropical Pacific, in charge of Alexander Agassiz, on the U. S. Fish Commission Steamer "Albatross," from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., commanding.

Reports on the Scientific Results of the Expedition to the Eastern Tropical Pacific, in charge of Alexander Agassiz, on the U. S. Fish Commission Steamer "Albatross," from October, 1904, to April, 1905, Lieut. Commander L. M. Garrett, U. S. N., commanding.

These publications are issued in numbers at irregular intervals. Each number of the Bulletin and of the Memoirs is sold separately. A price list of the publications of the Museum will be sent on application to the Director of the Museum of Comparative Zoölogy, Cambridge, Mass.